

PRINTING A MASK WITH MAXIMUM POSSIBLE PROCESS WINDOW THROUGH ADJUSTMENT OF THE SOURCE DISTRIBUTION

5 ABSTRACT OF THE DISCLOSURE

Disclosed is a method for illuminating a lithographic mask with light from different directions, in such a way that the intensities of the various incident beams provide the largest possible integrated process window. The process window is defined in terms of allowable ranges for printed shapes. For example, boundaries of the process window may be defined by shape limits corresponding to underexposed and overexposed conditions. Intensity parameters for representing the maximum possible intensities that can be permitted for overexposed tolerance positions are imposed through application of various constraints. Another set of intensity parameters for representing the minimum possible intensities that can be permitted for underexposed tolerance positions are imposed through application of various constraints. One parameter of each kind is defined for each of a number of different focal ranges. The optimum source intensities are determined from a linear program involving these and other constraints. The determined source intensities maximize the integrated range of dose and focal variations that can be tolerated without causing the printed shapes to depart from the allowed range of shapes.